

MANUFACTURING EXTENSION PARTNERSHIP

Success Stories from the Field

Tulsa Tube Bending Company

Oklahoma Alliance for Manufacturing Excellence

Tulsa Tube Bending Grows While The Market Shrinks

Client Profile:

Tulsa Tube Bending is the largest contract pipe and tube bending facility in the country. Founded in 1959, the company employs approximately 50 people at its Tulsa, Oklahoma headquarters.

Situation:

Virtually all of the products at Tulsa Tube Bending (TTB) are made-to-order. Bending pipe and tubing from 1-inch to 28-inches in diameter puts the company on a very short worldwide list of suppliers with capabilities in that range. Simple 90-degree bends to complex-connection, multiple-layer helical coils large enough to work through make the products at Tulsa Tube Bending quite varied. Traditional shop floor control of work produced long lead times, high costs, large inventories, and quality problems. The skill and experience levels of most employees are very high and lend themselves to team formation and participatory decision making. The Oklahoma Alliance for Manufacturing Excellence (The Alliance), a NIST MEP network affiliate, began conversations with leaders at Tulsa Tube Bending and invited them to attend a Lean 101 course. The class convinced TTB that lean enterprise could address problems with quality, long set-up times, ever-lengthening delivery times, huge inventories, and low profitability.

Solution:

The Alliance's first priority was to train a core group of TTB employees in the principles of lean manufacturing. About 35 key employees attended the Alliance's Lean 101 classes. The Alliance then helped facilitate a value stream mapping workshop at the plant for about 15 employees. Breaking the group into three teams, the Alliance mapped the flow and process details of three separate production areas. In the process of studying the mapping techniques, management gained great insight into the highest priority targets for initial rapid improvement team events—kaizen blitzes—which followed. The first kaizen events focused on two primary production areas: rotary benders and coil benders. Although huge amounts of waste had been identified in their value stream maps, both of these projects found most of the non-value-added activity centered on set-up and general job readiness. These activities consumed at least half of all employees' time. Primary efforts were placed on improving the information and work flows using lean tools like 5S workplace organization and point-of-use storage. After implementing these

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tools, total job-change time was reduced by more than half. Because an extremely high percentage of TTB machine time is spent in set-up, the changes increased capacity by more than 25 percent.

The next step was unique for a company at the early stages of lean transformation. Assessing the employee pool, management decided that in-house employees could be trained to lead future lean initiatives. Working with service providers, a five-day facilitator training seminar equipped the group of about 15 shop and support personnel to initiate future events, build teams, and manage the activities of kaizen events. TTB has seen the successful completion of several more kaizen events in purchasing, accounting, engineering, and other shop areas.

Results:

Reduced number of late shipments to zero.

Reduced lead times from a month to a few days.

Engaged workers in decision making and leadership roles.

Improved quality to reduce amount of rework.

Eliminated waste to reduce costs from 15 to 30 percent.

Increased business by 20 percent by becoming more competitive in the production areas.

Testimonial:

"Thanks to The Oklahoma Alliance for Manufacturing Excellence, we are stronger today than we've ever been."

Brad Fran, President